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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,543	03/17/2004	Gerard Hillion	PET-2130	2321

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MILLEN, WHITE, ZELANO & BRANIGAN, P.C.
2200 CLARENDON BLVD.
SUITE 1400
ARLINGTON, VA 22201

EXAMINER	
WARTALOWICZ, PAUL A	

ART UNIT	PAPER NUMBER
1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/801,543	HILLION ET AL.	
	Examiner	Art Unit	
	PAUL A. WARTALOWICZ	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 July 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19 and 21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19 and 21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Withdrawn Rejections

The rejection under 35 USC 112 has been withdrawn.

Response to Arguments

Applicant's arguments filed 7/13/2007 have been fully considered but they are not persuasive.

Applicant argues that is maintained that the patent does not teach or suggest a process in which, first, zinc oxide and zinc nitrate or carbonate are, as a mixture mixed with alumina gel that has been peptized in the presence of water and nitric acid, so as to form a paste.

However, the recitation pointed to by applicant does not exclude a mixture of zinc oxide and zinc carbonate as follows: "mixing *at least one* zinc compound". Stern teaches a short list of 4 compounds from which the one or more compounds are selected. Specifically, Stern teaches that "the zinc *compounds* are then selected from the group that is formed by zinc oxide, zinc hydroxide, zinc carbonate, and zinc hydroxycarbonate". This teaching appears to anticipate the instantly claimed zinc compound mixture. Given that the list from which to select the zinc compounds is short, Stern teaches a two compound mixture with the recitation "at least one zinc compound".

Even if the claimed limitation of a mixture of at least one zinc compound is only obvious over and not anticipated by Stern, one would expect the mixture of zinc oxide and zinc carbonate in the prior art to exhibit the same characteristics as the mixture of zinc oxide and zinc carbonate of the instant invention. In response to applicant's

argument that the prior art does not recognize the crushing strength of the mixture of zinc oxide and zinc carbonate and that alternatively Stern would not render obvious the mixture of zinc oxide and zinc carbonate, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Additionally, the rejection does not rely upon Stern teaching that the mixture (zinc carbonate and zinc oxide) is mixed with an alumina gel that has already been peptized. The rejection does state, however, that it would be obvious to one of ordinary skill in the art to make changes in the sequence of adding ingredients (*In re Rose*, 105 USPQ 137) such as peptizing an alumina prior to mixing with a mixture of zinc oxide and zinc carbonate.

Applicant argues that instant comparative example 1 shows unexpected results that the catalysts produced in accordance with the present invention differ physically from those known in the prior art.

However, the cited prior art does teach a mixture of zinc oxide and zinc carbonate and is therefore *not* equivalent to the comparison made in applicant's specification. It is maintained that the prior art teaches a substantially similar process as that instantly claimed such that the product produced by said process is substantially similar to that instantly claimed.

Applicant argues that Khare does nothing to remedy the deficiencies of Stern because Khare discloses the production of a sorbent composition and that spray drying,

sorbent-producing process of Khare is non-analogous to that of producing a catalyst used in the production of esters from vegetable oils.

However, both Stern and Khare are drawn to methods of making a paste of zinc aluminate. Khare teaches that the ratio of dry components and wet components can be adjusted to provide for the ability to be dispersed for spray drying (col. 3). One of ordinary skill in the art would recognize that the ratio of dry to wet components could be adjusted to provide a viscous paste (as for extruding) or a relatively non-viscous paste (as for spray drying). This determination would be dependent on the end use of the paste. Khare is relied upon for teachings regarding producing the paste.

Regarding the argument that the catalyst of Stern involves peptization and extrusion and that Khare involves a different process of spray drying and impregnation, both Stern and Khare suggest a process involving peptization and forming a paste. See Khare cols. 2, 3; and Stern col. 5.

Applicant argues that regardless of whether Walker teaches extrusion, one of ordinary skill in the art would not combine a reference using extrusion to produce a product with one involving spray drying because a combination of components acceptable in spray drying is not necessarily acceptable in extrusion.

However, it appears that Khare teaches that the ratio of dry components and wet components can be adjusted to provide for the ability to be dispersed for spray drying (col. 3). One of ordinary skill in the art would recognize that the ratio of dry to wet components could be adjusted to provide a viscous paste (as for extruding) or a relatively non-viscous paste (as for spray drying). This determination would be

dependent on the end use of the paste. However, it appears that Khare is relied upon for teachings regarding producing the paste, and not extruding.

Additionally, it is unclear why one of ordinary skill in the art would doubt that the components acceptable in Walker would not be acceptable in Khare. It appears both processes require a drying step and that a paste acceptable for extrusion could be produced in Khare by adjusting the ratio of wet to dry components as set forth in Khare. The determination of the ratio of dry components to wet components can be determined based upon the end use of the products and the ratio optimal for extrusion instead of spray drying can be determined through routine experimentation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stern (U.S. 5908946) in view of Khare (U.S. 5710091) and Andersen (U.S. 5830305) and Walker (U.S. 4370310).

Stern teach a process for making $ZnAl_2O_4$, x ZnO, y Al_2O_3 whereby x and y are in the range of 0-2 wherein zinc oxide and zinc carbonate (stage (a)) are mixed with hydrated alumina in nitric acid (hydrated alumina is alumina gel, col. 5, lines 40-47) (stage (b)) and wherein the paste formed is extruded (stage (c)), dried (stage (d)), and then calcined (stage (e)) (col. 5, lines 45-49) and wherein the mixed product is shaped by extrusion after mixing step (inherently teaches the limitation wherein water is added during the mixing to reach a suitable consistency of the paste, col. 5, lines 45-49).

Stern fail to teach the temperatures and time periods of stages a, b, and c. Stern also fail to teach the amount of zinc oxide replaced with either zinc carbonate or zinc nitrate, sequence of mixing nitric acid, zinc compounds, and alumina, the size of the extruding die.

As to the limitation in claims 1 and 16 of alumina gel has been peptized before mixing with a mixture obtained in stage (a), it would be obvious based upon the explanation that it would be obvious to one of ordinary skill in the art to make changes in sequence of adding ingredients (*In re Rose*, 105 USPQ 137) such as peptizing an alumina prior to mixing with a mixture of zinc oxide and zinc carbonate.

As to the limitation in claim 16 of mixing an alumina gel with a mixture of zinc oxide and a zinc carbonate or nitrate, and optionally extruding, drying and calcining a resultant paste, it would be obvious based upon the explanation that it would be obvious

to one of ordinary skill in the art to make changes in sequence of adding ingredients (*In re Rose*, 105 USPQ 137) such as mixing the zinc compounds prior to mixing the zinc mixture with alumina gel.

Khare teaches a method of making zinc aluminate (col. 1) wherein a mixture of zinc oxide and zinc nitrate or zinc carbonate (col. 1) which is contacted with nitric acid (col. 2, 3) is combined with alumina peptized with nitric acid (col. 3) to form a paste (col. 3).

From this disclosure, it would have been obvious to one of ordinary skill in the art to provide operating conditions such as 30 to 60 minutes reaction time to form a mixture of zinc oxide with zinc nitrate or zinc carbonate and nitric acid as disclosed by Khare and 60 to 120 minutes of mixing time to form a paste of zinc compounds and peptized alumina (col. 2, 3) in Stern through routine experimentation so as to obtain a mixture and paste thoroughly mixed as taught by Khare.

Additionally, Khare teach that it is known to use a suitable means fro mixing such as muller mixers and impact mixers as these are well known in the art to provide for thorough mixing (col. 3).

Khare teach that mixtures of zinc oxide and zinc carbonate or zinc nitrate can be used because these zinc compounds combine with alumina to form zinc aluminate (col. 1).

It would be obvious to replace zinc oxide with zinc carbonate or zinc nitrate in the claimed amounts as dictated by cost optimization and that the under calcining conditions, the zinc compounds mixed with the alumina form zinc aluminate.

Walker teaches a method of making zinc aluminate (col. 1) wherein it is known to react zinc oxide with alumina at elevated temperatures (col. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a temperature of 60-65°C in Stern because it is known in the art of producing zinc aluminate to react zinc oxide and alumina at elevated temperatures and that the reaction temperature could be readily determined through routine experimentation.

As to the limitation wherein stage (c) consists in extruding the paste that is thus obtained from a die with a diameter of between 1.5 and 3.7 mm of diameter, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide extruding paste that is thus obtained from a die with a diameter between 1.5 and 3.7 mm of diameter in order to obtain a size desirable for the end use of the product. Changes in size would have been obvious to one of ordinary skill in the art. *In re Rose* 105 USPQ 237 (See MPEP 2144.04).

As to the limitation wherein a pressure of higher than 2 MPa is exerted on the die so as to obtain compact extrudates that have a flawless surface condition and wherein at the end of operation the pressure again becomes less than 2 MPa, the recovered extrudates are not preserved, Andersen teaches wherein it is well known to impart pressure on dies of from 50 psi to 20000 psi for the purpose of maximizing strength and structural intensity (paragraph 253, lines 1-12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to exert pressure on a die, since it has been held that discovering

an optimum value or a result effective variable involved only routine skill in the art. In re Boesch, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980). The artisan would have been motivated to exert a pressure on a die by the reasoned explanation that it is well known to impart pressure on dies of from 50 psi to 20000 psi for the purpose of maximizing strength and structural intensity (paragraph 253, lines 1-12).

As to the limitation wherein the recovered extrudates are not preserved, it would be obvious to not impart pressure on dies at the above mentioned pressures if the desired effect was to not impart strength and structural intensity as taught by Andersen.

Walker teaches a process for making zinc aluminate (col. 1) wherein a paste of zinc oxide and alumina hydrate are dried in a forced draft oven (col. 3) depending on the size of the extrudate or other physical shape in which the paste has been formed (col. 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the drying conditions of the extrudate, since it has been held that discovering an optimum value or a result effective variable involved only routine skill in the art. In re Boesch, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980). The artisan would have been motivated to optimize the drying conditions of the extrudate by the reasoned explanation that drying conditions are based upon size and shape of the extrudate and one of ordinary skill would readily determine optimum drying conditions through routine experimentation.

Claims 1-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khare (U.S. 5710091) in view of Walker (U.S. 4370310) and Andersen (U.S. 5830305).

Khare teach a process for preparing zinc aluminate (col. 1) wherein a mixture of zinc compounds comprising zinc oxide and zinc carbonate or zinc nitrate (col. 1) is mixed with nitric acid (col. 3) which is subsequently mixed with alumina that has been mixed with nitric acid (col. 3) wherein the mixture of zinc compounds and alumina are dried and calcined (col. 3).

Khare fail to teach the temperatures and time periods of stages a, b, and c. Khare also fail to teach the size of the extruding die and the pressure at which the paste is extruded.

Khare teaches a method of making zinc aluminate (col. 1) wherein a mixture of zinc oxide and zinc nitrate or zinc carbonate (col. 1) which is contacted with nitric acid (col. 2, 3) is combined with alumina peptized with nitric acid (col. 3) to form a paste (col. 3).

From this disclosure, it would have been obvious to one of ordinary skill in the art to provide operating conditions such as 30 to 60 minutes reaction time to form a mixture of zinc oxide with zinc nitrate or zinc carbonate and nitric acid as disclosed by Khare and 60 to 120 minutes of mixing time to form a paste of zinc compounds and peptized alumina (col. 2, 3) in Stern through routine experimentation so as to obtain a mixture and paste thoroughly mixed as taught by Khare.

Additionally, Khare teach that it is known to use a suitable means for mixing such as muller mixers and impact mixers as these are well known in the art to provide for thorough mixing (col. 3).

Khare teach that mixtures of zinc oxide and zinc carbonate or zinc nitrate can be used because these zinc compounds combine with alumina to form zinc aluminate (col. 1).

It would be obvious to replace zinc oxide with zinc carbonate or zinc nitrate in the claimed amounts as dictated by cost optimization and that the under calcining conditions, the zinc compounds mixed with the alumina form zinc aluminate.

Khare fail to teach that the mixture of zinc compounds and alumina is extruded, but instead forms a paste that is spray-dried (col. 3).

However, Walker teach a process for making zinc aluminate (col. 1) wherein it is known to form a paste and extrude the paste into a desirable shape based on the end use of the product (col. 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide for an extrusion step in place of the spray drying step in Khare based upon the end use of the product (col. 2) as taught by Walker.

Walker teaches a method of making zinc aluminate (col. 1) wherein it is known to react zinc oxide with alumina at elevated temperatures (col. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a temperature of 60-65°C in Stern

because it is known in the art of producing zinc aluminate to react zinc oxide and alumina at elevated temperatures and that the reaction temperature could be readily determined through routine experimentation.

Walker teaches a process for making zinc aluminate (col. 1) wherein a paste of zinc oxide and alumina hydrate are dried in a forced draft oven (col. 3) depending on the size of the extrudate or other physical shape in which the paste has been formed (col. 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the drying conditions of the extrudate, since it has been held that discovering an optimum value or a result effective variable involved only routine skill in the art. In re Boesch, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980). The artisan would have been motivated to optimize the drying conditions of the extrudate by the reasoned explanation that drying conditions are based upon size and shape of the extrudate and one of ordinary skill would readily determine optimum drying conditions through routine experimentation.

As to the limitation wherein stage (c) consists in extruding the paste that is thus obtained from a die with a diameter of between 1.5 and 3.7 mm of diameter, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide extruding paste that is thus obtained from a die with a diameter between 1.5 and 3.7 mm of diameter in order to obtain a size desirable for the end use of the product. Changes in size would have been obvious to one of ordinary skill in the art. *In re Rose* 105 USPQ 237 (See MPEP 2144.04).

As to the limitation wherein a pressure of higher than 2 MPa is exerted on the die so as to obtain compact extrudates that have a flawless surface condition and wherein at the end of operation the pressure again becomes less than 2 MPa, the recovered extrudates are not preserved, Andersen teaches wherein it is well known to impart pressure on dies of from 50 psi to 20000 psi for the purpose of maximizing strength and structural intensity (paragraph 253, lines 1-12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to exert pressure on a die, since it has been held that discovering an optimum value or a result effective variable involved only routine skill in the art. In re Boesch, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980). The artisan would have been motivated to exert a pressure on a die by the reasoned explanation that it is well known to impart pressure on dies of from 50 psi to 20000 psi for the purpose of maximizing strength and structural intensity (paragraph 253, lines 1-12).

As to the limitation wherein the recovered extrudates are not preserved, it would be obvious to not impart pressure on dies at the above mentioned pressures if the desired effect was to not impart strength and structural intensity as taught by Andersen.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL A. WARTALOWICZ whose telephone number is (571)272-5957. The examiner can normally be reached on 8:30-6 M-Th and 8:30-5 on Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Paul Wartalowicz
February 4, 2009

Steven Bos
Primary Examiner
A.U. 1793

/Steven Bos/
Primary Examiner, Art Unit 1793